



# Nokia N8 Teardown

An inside view of the Nokia N8.

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## INTRODUCTION

The Symbian^3 powered N8 is regarded as Nokia's direct competitor to the iPhone 4, as well as all the Android smartphones on the market. Betting the farm on the success of the N8, Nokia has packed this phone full of awesome features.

Join us today as we tinker our way to the heart of Nokia's freshest smartphone.

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### TOOLS:

- [T4 Torx Screwdriver](#) (1)
  - [T5 Torx Screwdriver](#) (1)
  - [T6 Torx Screwdriver](#) (1)
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## Step 1 — Nokia N8 Teardown



- Our latest victim -- Nokia's just-released N8.
- Technical specs:
  - ARM11 680 MHz processor
  - 640 × 360 (nHD), 3.5" capacitive, multi-touch display with AMOLED technology
  - 256 MB SDRAM
  - 512 MB internal NAND memory and 16 GB on-board memory
  - 12 Megapixels (main) with Carl Zeiss optics and Xenon flash, 16:9 720p video, 25 FPS

## Step 2



- The 12 MP auto-focus camera is a honker. As we've seen in [other smartphones](#), the thickness of the camera drives the thickness of the phone.
- According to [Dr. Hubert Nasse](#), the lens inside the camera module is composed of five individual aspherical shaped optical elements. This complex shape facilitates very high quality pictures out of a very small device.
- Nokia chose to have the camera protrude outside of the back cover, which could either provide a good grasping point when taking the phone out of your pocket, or make it a hassle when returning the phone to your pocket.

## Step 3



- Aside from a standard 3.5mm stereo headphone jack, the N8 features both a mini HDMI and a micro USB port. Not sure what to do with that HDMI port? Try [setting a world record](#).
- Buttons include: Power, Home, Hold, Camera, and Volume Switch.
- The SIM and MicroSD ports are mounted side by side on the exterior of the phone, allowing for hot-swapping of the MicroSD.

## Step 4



- Utilizing the front facing camera, apps such as Fring or Skype enable users to video chat anywhere they like with mobile-to-mobile as well as mobile-to-desktop connections.

## Step 5



- Hey look at that -- visible T4 Torx screws! We figured this was a good place to start to take it apart.
- A trifle later the bottom portion of the phone was off. If we only had one of [these](#)...



## Step 6



- After the bottom cover of the phone is removed, a small battery retaining bracket can be popped out of its socket.
  - After that, the hologram-equipped battery can be slid out of its cozy home.
- i** Although it requires the removal of two odd-sized screws, the battery really isn't that hard to replace. Thumbs up for no soldering!

## Step 7



- The BL-4D 3.7 V, 1200 mAh Li-Ion battery is considered non-removable. Sure Nokia, sure...
- ❗ The hologram stuck under the battery's pull tab is most likely there to ensure you're getting an actual Nokia-approved battery and not some low quality clone.

## Step 8




- After popping off the protective cover, a T5 Torx screw near the mini HDMI port can be removed.
- The top of the phone comes off next, exposing more Torx screws for us to remove.



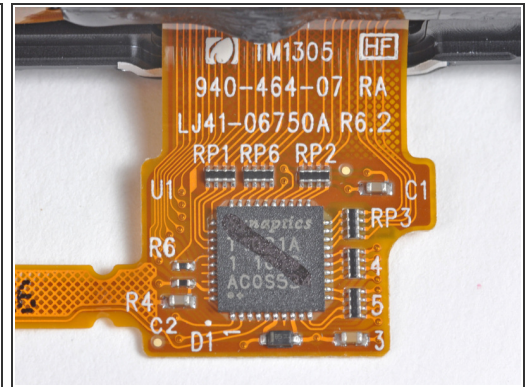
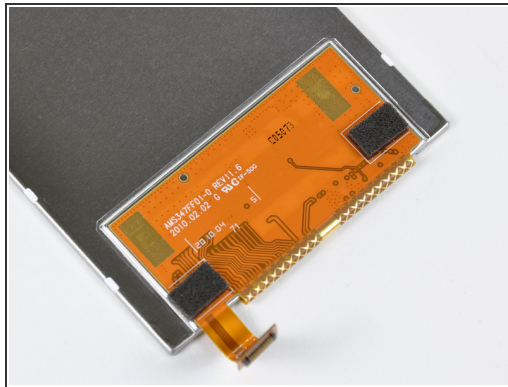
## Step 9



- The front part of the phone opens up like a clam.

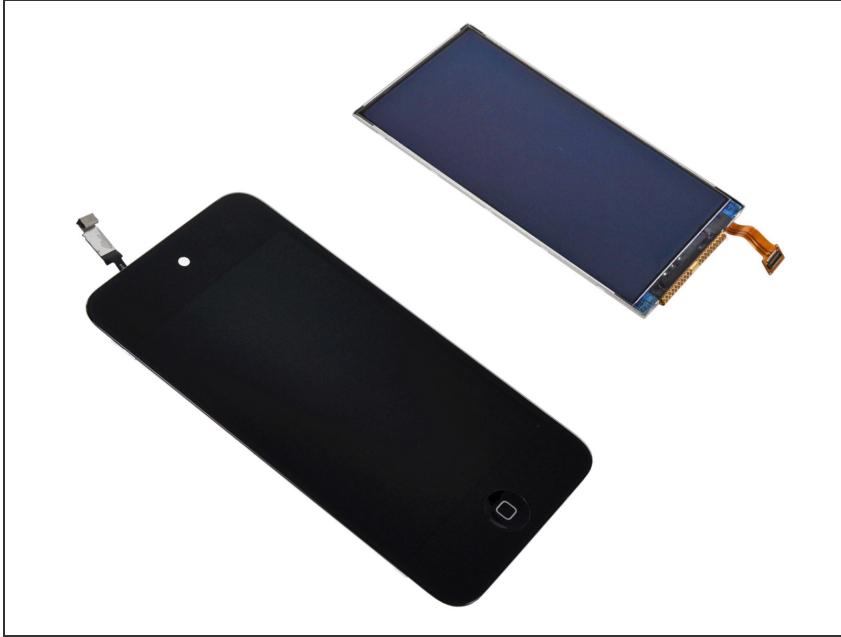
 The digitizer and display cables still attach the front panel to the rest of the phone, so be sure to lift the display assembly from its top edge if you decide to open your unit.

## Step 10



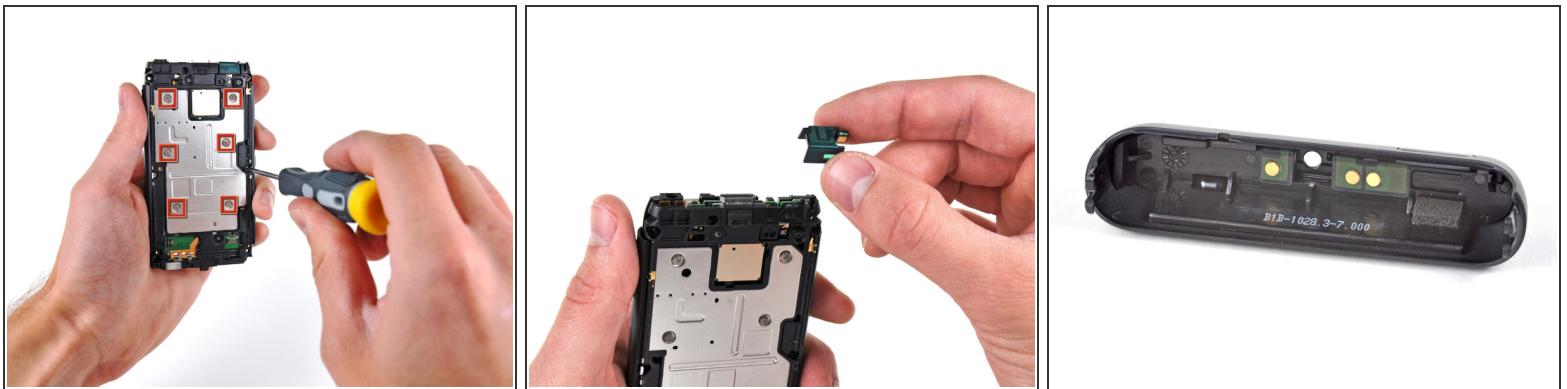
- Thankfully the glass is not fused to the face of the AMOLED display, so you don't have to replace both if just the glass breaks.
- The silk screen on the back of the display reads:
  - AMS347FF01-0
- The silk screen also indicates the display was manufactured February 2, 2010. This thing has been around for quite some time.
- The touch screen controller is a Synaptics T1201A. This is the same chip found in the [Microsoft Kin Two](#) and RIM Blackberry Torch.

## Step 11



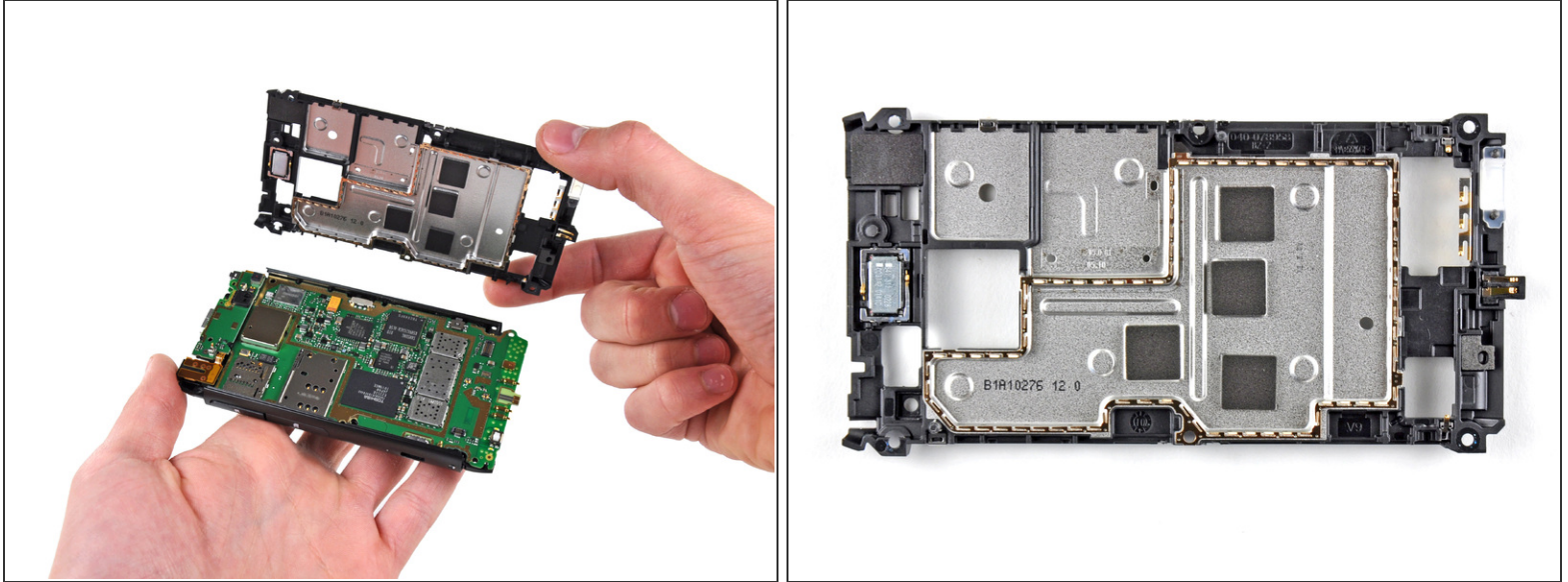
- Here's a comparison of the N8's display with an LCD from the 4th generation iPod Touch. You can differentiate between LCD and AMOLED screens by noticing the slightly blue tint the AMOLED display gives off when a light is shone against it.

## Step 12



- A couple T6 Torx screws and the upper antenna hold the mid-plane to the inside of the N8.
  - Six pads akin to steel wool help ground the back of the AMOLED display to the mid-plane.
- i** Nokia got pretty creative with their antenna placement, as this device is primarily encased in aluminum. The main antennas are located near the flat plastic plates on the top and bottom of the phone, as seen in the second and third pictures.

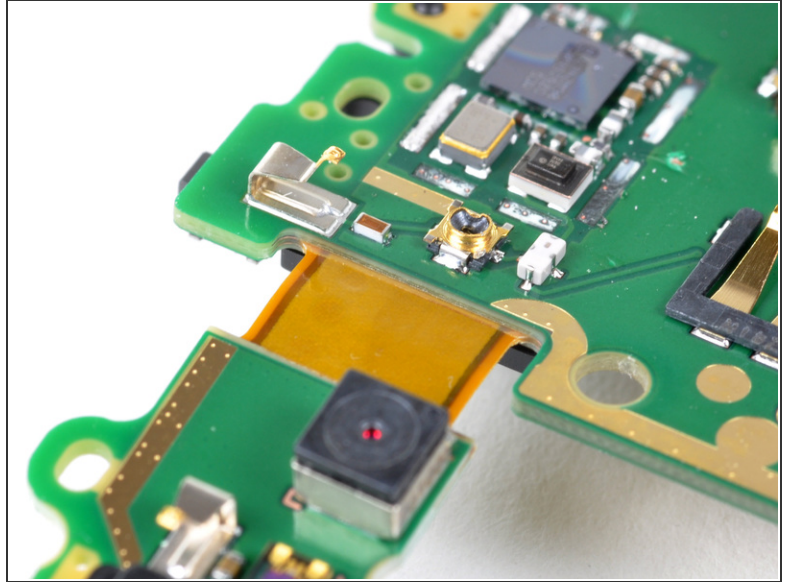
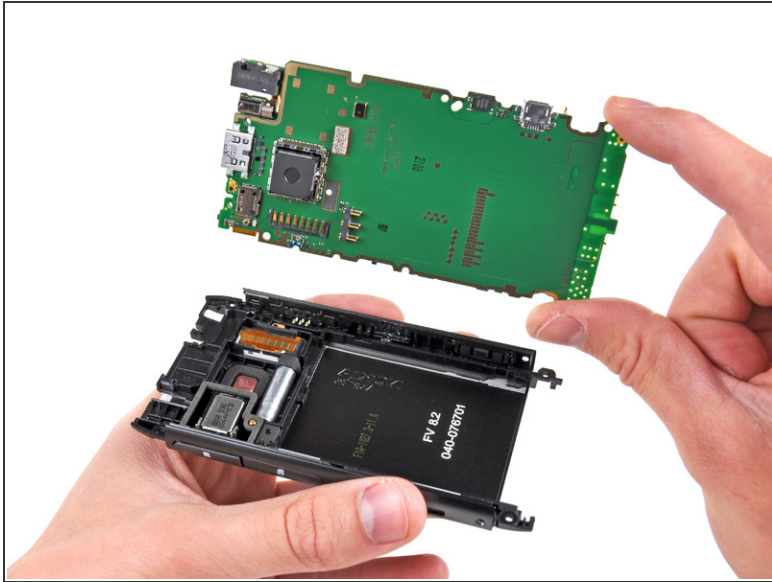
## Step 13



- After removing the screws and popping off the antenna, the mid-plane can be removed from the N8.
- ⓘ The design of the steel mid-plane is pretty genius. Nokia integrated a large EMI shield into the mid-plane to protect the main chips. In addition, thermal pads were placed on the inner face of the mid-plane to conduct heat away from the main chips.
- ⓘ As processor speeds increase and devices become more integrated, the need for thermal management becomes critical to ensure longevity and operability in many environments.

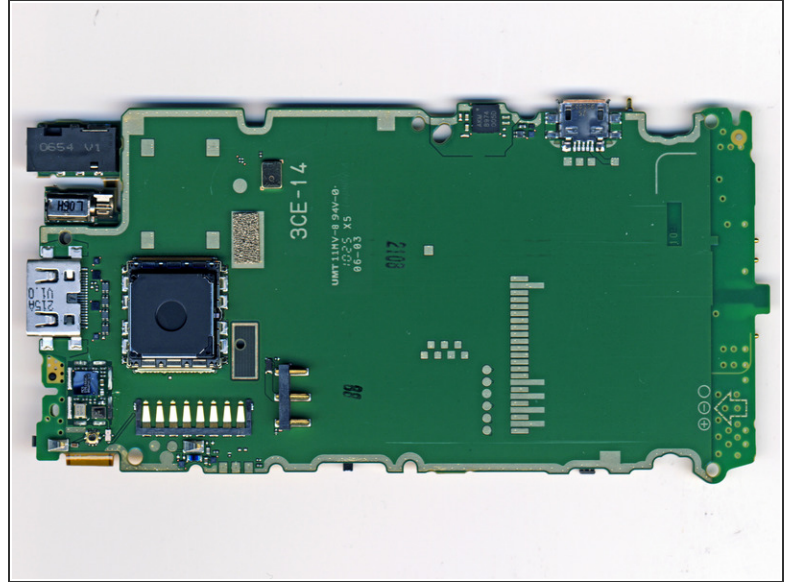
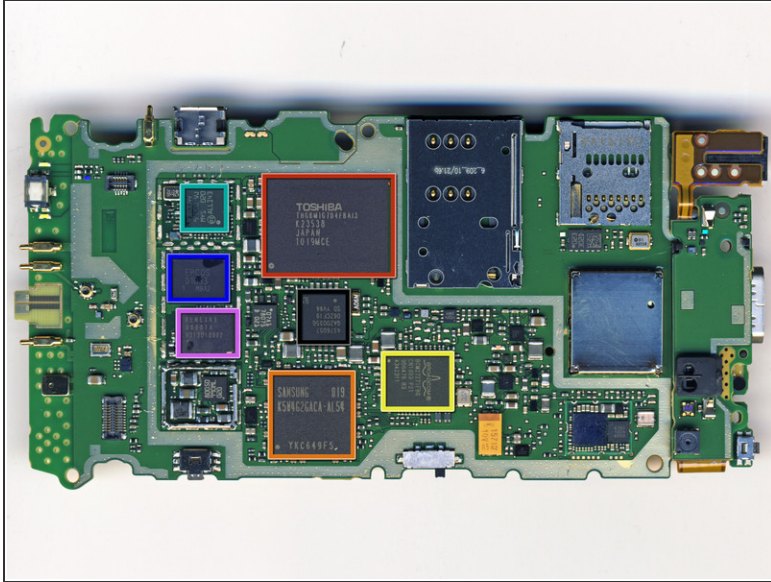


## Step 14



- After the mid-plane is removed, the motherboard can be simply lifted out of the rear case.
- The daughter board at the top of the motherboard has an interesting design in that it is connected to the main motherboard via a ribbon cable that is sandwiched between the many layers of the motherboard.
- ⓘ On most devices, ribbon cables are attached with ZIF connectors or are soldered to the surface of the board, not sandwiched between layers.

## Step 15



- The Nokia N8 motherboard:
  - Toshiba THGBM1G7D4FBA13 K23538 (16 GB Internal Memory)
  - Samsung K5W4G2GACA - AL54 (CPU + DDR RAM + NAND ROM)
  - Broadcom [BCM2727](#) GPU with dedicated 3D Graphics
  - 4380044 9920Q VJ (RF Transceiver) from STMicroelectronics
  - EPCOS D1053 (RF Front end module)
  - RENESAS 09801A (RF Power amplifier)
  - 4376057 GAZ0035G (Baseband) from Texas Instruments

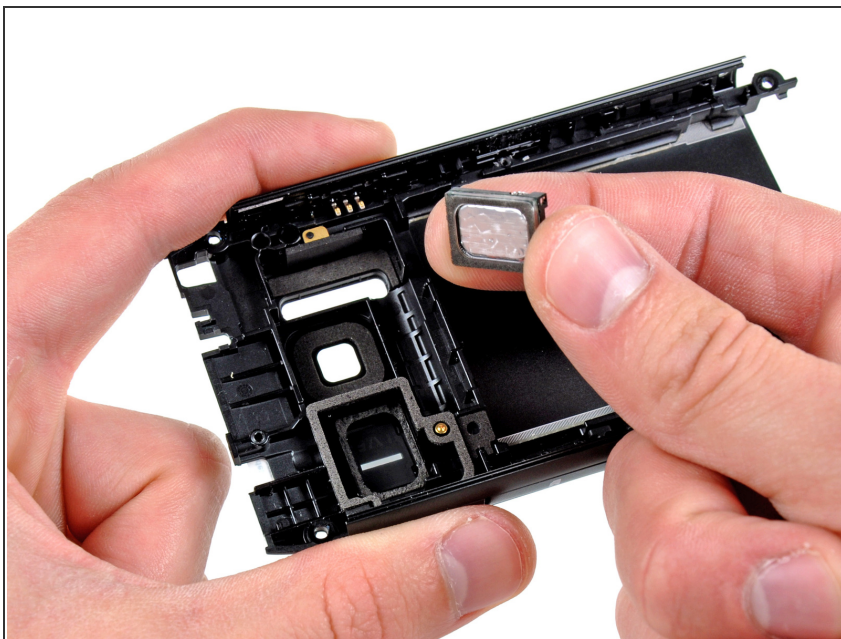


## Step 16



- With the motherboard out of the rear case, the flash unit simply lifts out.
- As opposed to many [other smartphones](#) that use either a single or double LED for the flash, the N8 uses a Xenon flash tube similar to the kind of flash found in full-size cameras.
- The large capacitor on the flash module supplies the high voltage necessary to produce such a brilliant flash.

## Step 17

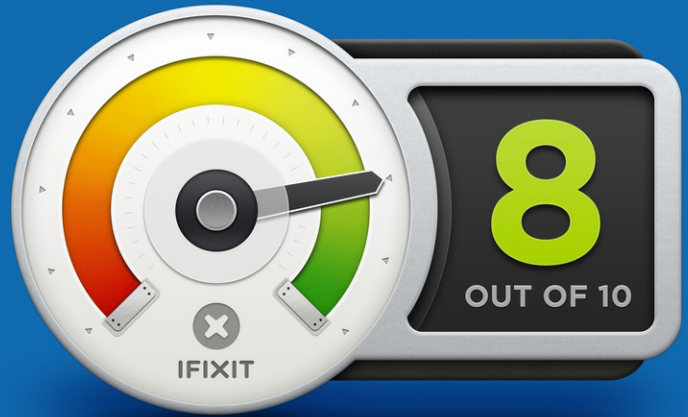


- The loudspeaker can be pried off the adhesive securing it to the rear case at this point.
- ⓘ This loudspeaker is primarily used for speaker phone as well as for playing audio from media stored on the phone.

## Step 18



## REPAIRABILITY SCORE:



- Nokia N8 Repairability: **8 out of 10** (10 is easiest to repair)
  - The battery, although considered by Nokia not to be user-serviceable, can be easily removed.
  - The AMOLED display easily comes apart from the glass, which means that you can replace the glass and the display independently.
  - There are mostly mechanical fasteners, and very little glue inside.
  - You still have to use a heat gun to remove the front glass, but at least you're heating up metal that won't deform as easily as plastic.
  - Removing the cameras is near-impossible, and requires tedious, potentially detrimental steps.

To reassemble your device, follow these instructions in reverse order.

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